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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,258	09/30/2002	James Richard Williams	839-1318	5664

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EXAMINER

LEE, SHUN K

ART UNIT PAPER NUMBER

2878

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/065,258

Applicant(s)

WILLIAMS, JAMES RICHARD

Examiner

Shun Lee

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,9-12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,9-12 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2002 and 10 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings were received on 10 August 2004. These drawings are acceptable.

Specification

2. The amendment filed 10 August 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: (a) in paragraph 9, newly added "adhesive tape" is not equivalent to KAPTON tape; and (b) adhesive strip of a polyimide film or tape. e.g., KAPTON®.

Applicant is required to cancel the new matter in the reply to this Office Action.

3. Applicant should also note that the amendment filed 10 August 2004 deletes reference character "24" and thus reference character "24" in Fig. 2 is no longer mentioned in the description (see 37 CFR 1.84(p)(5)).

Claim Objections

4. Claims 1 and 9 are objected to because of the following informalities:

(a) in claim 1, ", in use," on lines 6-7 should probably be deleted; and

(b) in claim 9, ", in use," on line 8 should probably be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5, 9-12, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKay *et al.* (US 3,240,937) in view of Frederick *et al.* (US 5,962,855).

In regard to claims **1, 3-5, 9-11, 14, and 15**, McKay *et al.* disclose (Figs 1 and 1a) a scintillation detector comprising:

- (a) a substantially cylindrical crystal element (27) comprised of sodium iodide (column 3, line 70 to column 4, line 1), the crystal element (27) hermetically sealed (*i.e.*, sealed so as to protect it from moisture; column 4, lines 31-39) within a substantially cylindrical housing (31), one end of said housing (31) adapted for coupling with a photo-multiplier tube (28);
- (b) a neutron absorbing (*e.g.*, gadolinium; column 6, lines 33-54) foil (32), in use, excluding thermal neutrons (column 6, lines 2-6) from the crystal element (27)
- (c) a gadolinium disc (32) covers a rear face of said crystal element (27);
- (d) a photo-multiplier tube (28) affixed to a forward end of said crystal element (27).

The detector of McKay *et al.* lacks that the crystal element is wrapped with a reflective tape with the gadolinium foil radially between a polyamide layer and a stainless steel sleeve within the housing. Frederick *et al.* teach (column 8, lines 14-18) to provide a

reflective tape (40 in Figs. 9 and 10), in order to enhance light transmission into the photo-multiplier tube. Frederick *et al.* also teach (Figs. 9 and 10) to provide a radial and axial support assembly (301) comprising a radially inner sleeve (314) comprised of aluminized polyamide (column 11, lines 14-25) and a radially outer sleeve (318) comprised of stainless steel (column 11, lines 26-38) which have a coefficient of thermal expansion near the radial springs (418), in order to minimize noise due to shock and vibration (column 4, lines 13-24) while also enhancing light transmission into the photo-multiplier tube. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate the gadolinium foil between a polyamide layer and a stainless steel sleeve as part of a radial and axial support assembly in the detector of McKay *et al.*, in order to minimize noise due to shock and vibration while enhancing light transmission into the photo-multiplier tube with a reflective tape and aluminized polyamide as taught by Frederick *et al.*

In regard to claim 2 (which is dependent on claim 1) and claim 12 (which is dependent on claim 9), while McKay *et al.* also disclose (Figs 1 and 1a) that the crystal element (28) is surrounded by gadolinium (32) except the upper surface (which is shown as open) adjacent to the photo-multiplier tube (28), the detector of McKay *et al.* lacks that the crystal element is formed with a conical forward portion. Frederick *et al.* teach (Figs. 14 and 15) to form a crystal element (514) with a conical forward portion, in order to provide a void space (522) which minimizes (column 16, line 59 to column 17, line 4) heat transfer between the crystal element (514) and the photo-multiplier tube (116). Therefore it would have been obvious to one having ordinary skill in the art at the

time of the invention to form the crystal element in the detector of McKay *et al.* with a conical forward portion, in order to obtain a void space which minimizes heat transfer between the crystal element and the photo-multiplier tube as taught by Frederick *et al.*

In regard to claims **16-19**, which are dependent on claim 14, the detector of McKay *et al.* lacks that an aluminum collar is fixed to an underside of said radially outer sleeve at one end thereof, and wherein said gadolinium foil sleeve extends across said collar, said gadolinium foil sleeve is adhesively secured on a radially inner surface thereof to said radially inner sleeve only in an area that is aligned with said aluminum collar and a radially outer surface of said gadolinium foil is adhesively secured to said underside of said radially outer sleeve. Frederick *et al.* teach (column 10, line 45 to column 11, line 39) to provide a radial and axial support assembly (301) comprising a 0.0015 inch thick aluminum layer bonded to a 0.0015 inch thick stainless steel radially outer sleeve (318) which is bonded along less than one third of the length of a 0.001 inch thick polyamide radially inner sleeve (314) thus obtaining a 0.001 inch grease layer (316) along the remaining length, in order to minimize noise due to shock and vibration (column 4, lines 13-24). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to adhere the gadolinium foil in the detector of McKay *et al.* to a 0.001 inch thick polyamide radially inner sleeve and a 0.0015 inch thick aluminum spacer layer (*i.e.*, collar) bonded to a 0.0015 inch thick stainless steel radially outer sleeve so as to obtain between the gadolinium foil and the outer sleeve a 0.001 inch grease layer in the region not occupied by the aluminum

spacer layer, in order to minimize noise due to shock and vibration as taught by Frederick *et al.*

Response to Arguments

7. Applicant's arguments filed 10 August 2004 have been fully considered but they are not persuasive.

Applicant argues (last two paragraphs on pg. 13 of remarks filed 10 August 2004) that the cylindrical crystal element of McKay *et al.* is not hermetically sealed within the cylindrical housing. Examiner respectfully disagrees. McKay *et al.* state (column 4, lines 31-39) that "The luminophor 27 is shown mounted within an aluminum container 31 which serves to protect it from moisture and physical damage. The upper end of the container 31 facing the photomultiplier tube 28 is shown as open, with the luminophor 27 in direct contact with the sensitive face of the photomultiplier tube 28. However, it is to be understood that the container 31 may be sealed with a transparent cover of glass or plastic in a manner well known in the art". Therefore the cylindrical crystal element of McKay *et al.* is hermetically sealed within the cylindrical housing with a transparent cover of glass or plastic in a manner well known in the art, in order to protect the cylindrical crystal element from moisture and physical damage.

Applicant also argues (first four paragraphs on pg. 14 of remarks filed 10 August 2004) that in use, the gadolinium foil of McKay *et al.* does not exclude thermal neutrons from the crystal element. Examiner respectfully disagrees. McKay *et al.* state (column 6, lines 2-54) that "For example, the neutron absorbing material 32 may be a sheet of cadmium surrounding the crystal at such a thickness, i.e.,

.025" that it essentially captures all of the thermal neutrons which diffuse to the layer of cadmium. ... While cadmium is preferred as the material for capturing the thermal neutrons in the vicinity of the detector in order to neutralize the effect of chlorine upon the neutron gamma ray log, it is to be understood that other materials may be employed rather than cadmium and that other materials may be employed together with cadmium. ... Gadolinium may also be employed in carrying out the invention. Gadolinium has a capture cross-section of 36,300 Barns and emits neutron capture gammas up to 7.78 mev". Therefore the gadolinium foil of McKay *et al.* does exclude thermal neutrons from the crystal element since the foil essentially captures all of the thermal neutrons which diffuse to the foil.

Applicant then argues (last paragraph on pg. 14 to first two paragraphs on pg. 15 of remarks filed 10 August 2004) that the gadolinium foil as used in McKay *et al.* to compensate for the change in neutron flux when the down-hole concentration of chlorine changes, is a function that is not of concern to Frederick and that there is nothing in McKay *et al.* that would suggest the need for a radial and axial support assembly of the type disclosed in Frederick *et al.* In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed.

Cir. 1992). In this case, Frederick *et al.* teach (Figs. 9 and 10) to provide a radial and axial support assembly (301) comprising a radially inner sleeve (314) comprised of aluminized polyamide (column 11, lines 14-25) and a radially outer sleeve (318) comprised of stainless steel (column 11, lines 26-38) which have a coefficient of thermal expansion near the radial springs (418), in order to minimize noise due to shock and vibration (column 4, lines 13-24) while also enhancing light transmission into the photo-multiplier tube. The motivation of minimizing noise in the detector of McKay *et al.* due to shock and vibration while enhancing light transmission into the photo-multiplier tube is found in the Frederick *et al.* reference. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to incorporate the gadolinium foil between a polyamide layer and a stainless steel sleeve as part of a radial and axial support assembly in the detector of McKay *et al.*, in order to minimize noise due to shock and vibration while enhancing light transmission into the photo-multiplier tube with the aluminized polyamide as taught by Frederick *et al.*

In response to applicant's argument (third paragraph pg. 15 of remarks filed 10 August 2004) that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL



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